

**FIG. 1**  
PRIOR ART

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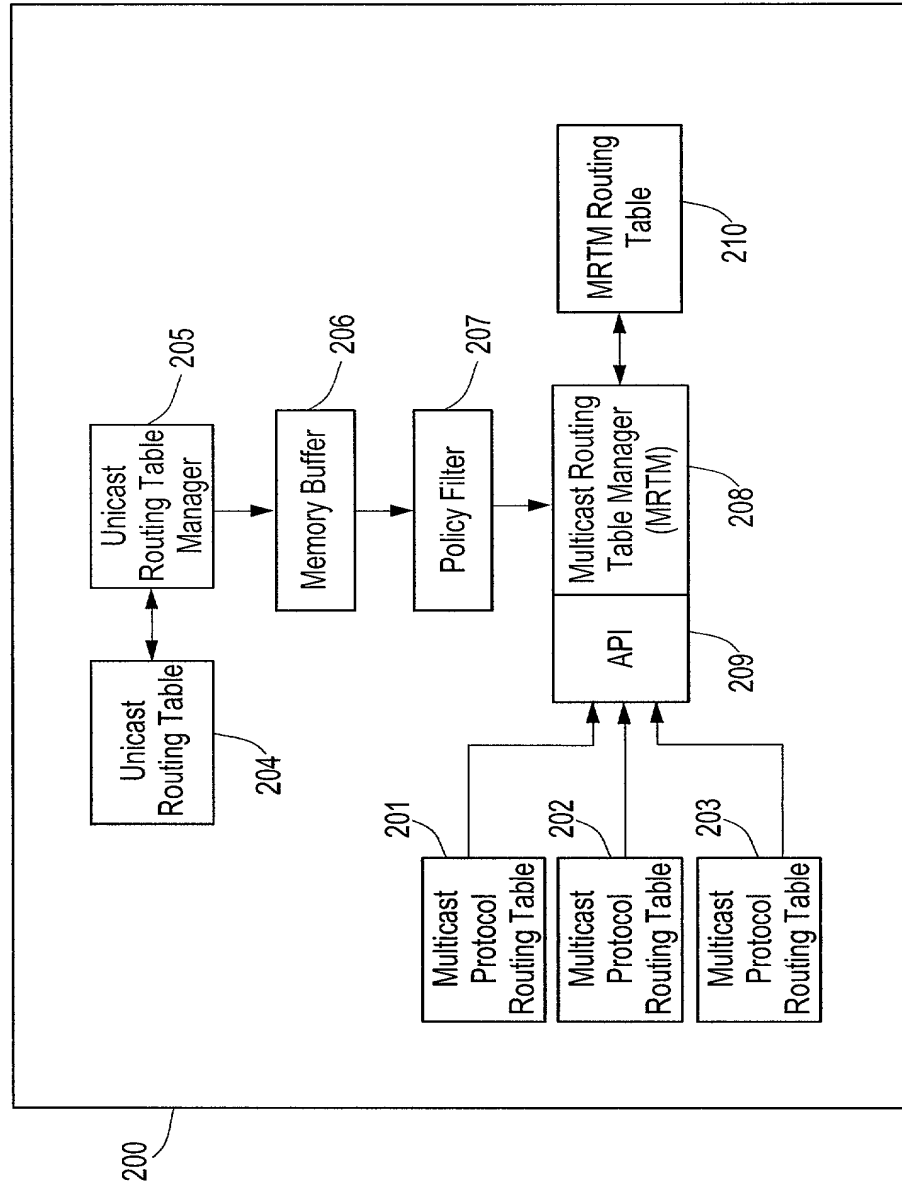
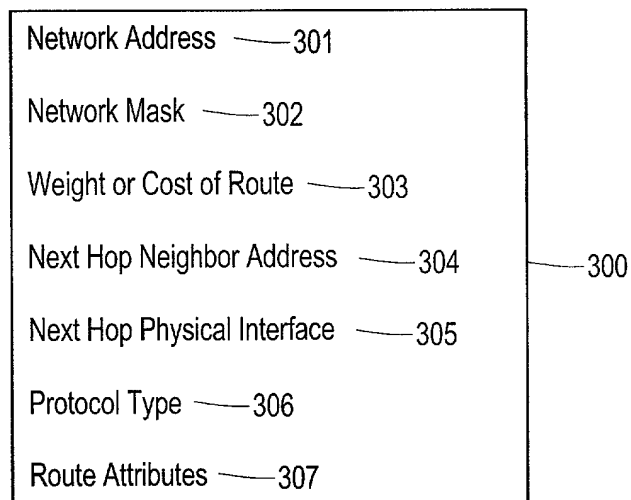


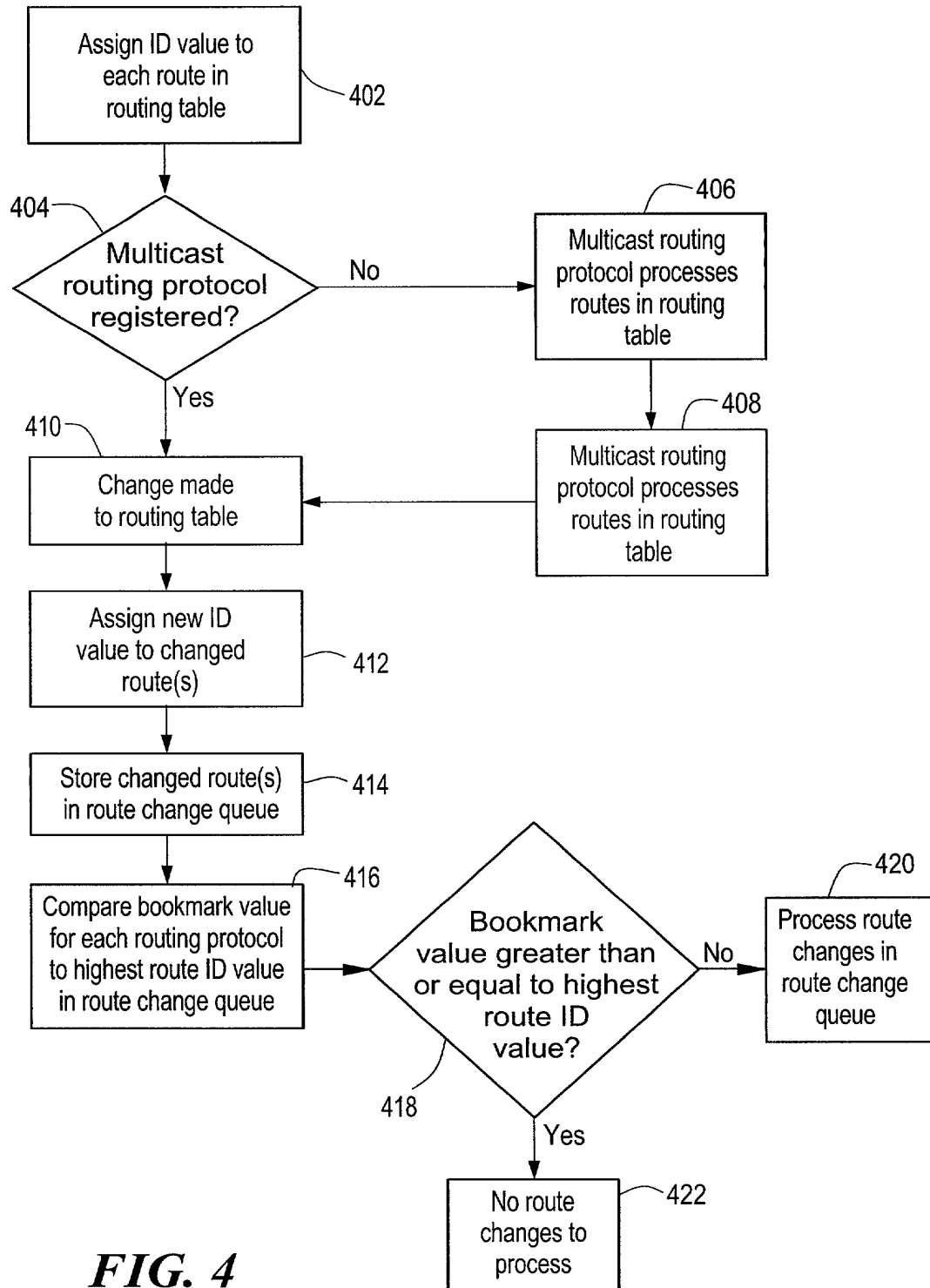
FIG. 2

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**FIG. 3**

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**FIG. 4**

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```
wfIpMrtmInjectRtTable OBJECT-TYPE
    SYNTAX SEQUENCE OF WfIpMrtmInjectRtEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "The Table of MRTM Inject Unicast routes Policy Rules"
    ::= { wfIpPolicyGroup 21 }

wfIpMrtmInjectRtEntry OBJECT-TYPE
    SYNTAX WfIpMrtmInjectRtEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "An entry in the Mrtm Inject Route Rule Table"
    INDEX { wfIpMrtmInjectRtIndex }
    ::= { wfIpMrtmInjectRtTable 1 }

WfIpMrtmInjectRtEntry ::= SEQUENCE {
    wfIpMrtmInjectRtDelete
        INTEGER,
    wfIpMrtmInjectRtDisable
        INTEGER,
    wfIpMrtmInjectRtIndex
        INTEGER,
    wfIpMrtmInjectRtName
        DisplayString,
    wfIpMrtmInjectRtNetworks
        OCTET STRING,
    wfIpMrtmInjectRtAction
        INTEGER,
    wfIpMrtmInjectRtPreference
        INTEGER,
    wfIpMrtmInjectRtPrecedence
        INTEGER,
    wfIpMrtmInjectRtInject
        OCTET STRING,
    wfIpMrtmInjectRtInInterface
        OCTET STRING,
    wfIpMrtmInjectRtType
        INTEGER,
    wfIpMrtmInjectRtMetric
        INTEGER

wfIpMrtmInjectRtDelete OBJECT-TYPE
    SYNTAX INTEGER {
        create (1),
        delete (2)
    }
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "Create/Delete parameter."
    DEFVAL { create }
    ::= { wfIpMrtmInjectRtEntry 1 }
```

**FIG. 5A**

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```

wfIpMrtmInjectRtDisable OBJECT-TYPE
    SYNTAX  INTEGER {
        enabled (1),

        disabled (2)
    }
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "Enable/Disable parameter."
    DEFVAL  { enabled }
    ::= { wfIpMrtmInjectRtEntry 2 }

wfIpMrtmInjectRtIndex OBJECT-TYPE
    SYNTAX  INTEGER
    ACCESS  read-only
    STATUS  mandatory
    DESCRIPTION
        "Rule index number"
    ::= { wfIpMrtmInjectRtEntry 3 }

wfIpMrtmInjectRtName OBJECT-TYPE
    SYNTAX  DisplayString
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "Rule name - user specified name for this rule"
    ::= { wfIpMrtmInjectRtEntry 4 }

wfIpMrtmInjectRtNetworks OBJECT-TYPE
    SYNTAX  OCTET STRING
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "Network identification list. This identifies which
        networks will match this rule.  If non-null, the octet
        string contains one or more 3-tuples of this form:

        first octet:  exact (1) or range (2)
        next 4 octets: network number
        next 4 octets: network mask

        An entry with an 'exact' tag means to only match the
        specific network advertisement (number & mask).  An
        entry with a 'range' tag means to match any network
        number that falls in the range indicated by the number
        and mask.

        A null string also means 'match any route'."
    ::= { wfIpMrtmInjectRtEntry 5 }

```

**FIG. 5B**

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```
wfIpMrtmInjectRtAction OBJECT-TYPE
    SYNTAX  INTEGER {
                accept (1),
                ignore (3)
            }
    ACCESS   read-write
    STATUS   mandatory
    DESCRIPTION
        "action. 'accept' means that the route should be
        imported from RTM to the Mrtm routing table. 'ignore'
        means don't consider the route"
    DEFVAL   { accept }
    ::= { wfIpMrtmInjectRtEntry 6 }
```

```
wfIpMrtmInjectRtPreference OBJECT-TYPE
    SYNTAX  INTEGER(0..16)
    ACCESS   read-write
    STATUS   mandatory
    DESCRIPTION
        "preference. This is a metric to be used to compare
        the preference path between inject route or the existing
        route in Mrtm routing table. If the injecting unicast
        route is preferred, then the value need to be set higher than
        the preference of the existing route.
        If the injecting unicast route path is preferred,
        then the value need to be set greater than 0.
        This parameter only has meaning if the action is 'accept'."
    DEFVAL   { 1 }
    ::= { wfIpMrtmInjectRtEntry 7 }
```

```
wfIpMrtmInjectRtPrecedence OBJECT-TYPE
    SYNTAX  INTEGER
    ACCESS   read-write
    STATUS   mandatory
    DESCRIPTION
        "precedence. This is a metric to be used to compare
        this policy rule to the other rules that a given route may
        match. A rule with a higher precedence value will be
        chosen over one with a smaller value. In the case of
        a tie, the rule index is used (larger wins).

        Note that the policy match is not most specific
        so the precedence has to be used to select from
        multiple matches."
    ::= { wfIpMrtmInjectRtEntry 8 }
```

**FIG. 5C**

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wfIpMrtmInjectRtInject OBJECT-TYPE

SYNTAX OCTET STRING

ACCESS read-write

STATUS mandatory

DESCRIPTION

"network injection list. this octet string should only be non-null if the action is 'accept' and if it is desired to insert networks into the routing table that differ from the actual advertised network. For instance, if a number of networks in a certain range are learned, an aggregate advertisement could be inserted instead of the individual networks."

If non-null, The octet string contains one 2-tuples of this form:

first 4 octets: network number  
next 4 octets: network mask

Upon receiving a route that matches this filter, the network in this list will be considered for the inclusion in the routing table. If the list is null, the actual received network is

considered."

::= { wfIpMrtmInjectRtEntry 9 }

wfIpMrtmInjectRtInInterface OBJECT-TYPE

SYNTAX OCTET STRING

ACCESS read-write

STATUS mandatory

DESCRIPTION

"Injected unicast routes inbound circuit list.

This octet string contains one or more 4-octet IP addresses.

If an interface address is included in this list, the unicast routes received on that interface match this rule will be accepted.

If null, this filter applies to the unicast routes received on any interface."

::= { wfIpMrtmInjectRtEntry 10 }

**FIG. 5D**



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wfIpMrtmInjectRtType OBJECT-TYPE
    SYNTAX  INTEGER {
        static-route (1),
        rip (15),
        egp (16),
        ospf (17),
        bgp (18),
        direct-route (40),
        best-route (41),
        all-route (42)
    }
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "Select the injected route type from RTM. The value of each
        route type will be the same as unitcast route type. See
        define in ip_rt_types.h"
    DEFVAL  { best route }
    ::= { wfIpMrtmInjectRtEntry 11 }

wfIpMrtmInjectRtMetric OBJECT-TYPE
    SYNTAX  INTEGER (1..31)
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "Route Metric. This value represents the cost of the external
        routes which are OSPF or unicast best route to be injected
        into Mrtm routing table. The default value is set to 1."

    DEFVAL  { 1 }
    ::= { wfIpMrtmInjectRtEntry 12 }

wfMrtm          OBJECT IDENTIFIER ::= { wfMrtmGroup 1 }

wfMrtmCreate OBJECT-TYPE
    SYNTAX  INTEGER {
        created (1),
        deleted (2)
    }
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "Create/Delete a parameter. Default is created.
        Users perform a set operation on this
        object in order to create/delete MRTM table."
    DEFVAL  { created }
    ::= { wfMrtm 1 }

```

**FIG. 5E**

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wfMrtmEnable OBJECT-TYPE
    SYNTAX  INTEGER {
        enabled (1),
        disabled (2)
    }
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "Enable/Disable parameter indicates whether
        this MRTM record is enabled or disabled."
    DEFVAL  { enabled }
    ::= { wfMrtm 2 }

wfMrtmState OBJECT-TYPE
    SYNTAX  INTEGER {
        up (1),
        down (2),
        init (3),
        notpres (4)
    }
    ACCESS  read-only
    STATUS  mandatory
    DESCRIPTION
        "The current state of the entire MRTM."
    DEFVAL  { notpres }
    ::= { wfMrtm 3 }

wfMrtmDebug OBJECT-TYPE
    SYNTAX  INTEGER
    ACCESS  read-write
    STATUS  mandatory
    DESCRIPTION
        "This is a debug field for PGM. Setting bits
        cause PGM to generate certain log messages.
        This field will NOT restart PGM.
        The follow bits maybe set in any combination
        (LS stands for least significant) :

        0x00000001 for no display
        0x00000002 for interface to RTM
        0x00000004 for interface to policy
        0x00000008 for interface to multicast protocols
        0x00000010 for route change or add or delete.
    ::= { wfMrtm 4 }

```

**FIG. 5F**

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**FIG. 5G**

wfMrtmHoldDown OBJECT-TYPE

SYNTAX INTEGER (10..60)

ACCESS read-write

STATUS mandatory

DESCRIPTION

"This value specifies, in seconds, how long a route  
will be held in MRTM table after it becomes unreachable."

DEFVAL { 10 }

::= { wfMrtm 5 }

wfMrtmFifoSize OBJECT-TYPE

SYNTAX INTEGER (1..100)

ACCESS read-write

STATUS mandatory

DESCRIPTION

"This value represents the depth of the FIFO  
between RTM and MRTM used for the outstanding route changes.  
The memory will be pre-allocated as the size of  
x times 1000 of FIFO route entry."

DEFVAL { 5 }

::= { wfMrtm 6 }

wfMrtmEstimatedNetworks OBJECT-TYPE

SYNTAX INTEGER (10..200000)

ACCESS read-write

STATUS mandatory

DESCRIPTION

"This parameter indicates the estimated number of routes  
per slot that the router will need to keep in its routing  
table. This value is used for pre-allocating routing tables."

::= { wfMrtm 7 }

wfMrtmMaxRoutes OBJECT-TYPE

SYNTAX INTEGER

ACCESS read-write

STATUS mandatory

DESCRIPTION

"Max number of routes, per slot. This is used to limit  
the size of routing tables. Note that routes are kept on a  
per-source network basis, independent of multicast group."

::= { wfMrtm 8 }

wfMrtmActualRoutes OBJECT-TYPE

SYNTAX INTEGER

ACCESS read-only

STATUS mandatory

DESCRIPTION

"Total actual entries currently in the routing table"

::= { wfMrtm 9 }

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